

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 - 37 (canceled)

38. (currently amended) A thin film head having a reading part and a recording part comprising:

an upper magnetic pole having a first width at an air bearing surface and a second width which is larger than the first width at a first depth position from the air bearing surface;

a lower magnetic pole having a lower magnetic main layer, ~~a lower magnetic pole front end portion on the lower magnetic main layer,~~ and a projection step portion ~~on above~~ the lower magnetic main layer ~~pole front end portion~~; and

an upper magnetic pole top layer recessed from the air bearing surface;

a first coil formed between the upper magnetic pole top layer and the lower magnetic main layer;

a first insulating layer covering the first coil;

a non-magnetic insulating layer on the lower magnetic main layer, which is formed at an opposite side to the air bearing surface;

a second insulating layer formed between the first insulating layer and the non-magnetic insulating layer;

wherein the projection step portion includes one portion which faces the upper magnetic pole, and another portion which is formed so as to extend from a second

depth position from the air bearing surface to a third depth position from the air bearing surface and having a part which does not face the upper magnetic pole;

wherein the upper magnetic pole has a third width at a fourth depth position which is defined by a closest edge from the air bearing surface of the second insulating layer;

wherein the second and third depth positions are provided between the fourth depth position and the air bearing surface;

wherein a fourth width at the second depth position of the projection step portion is larger than a width in a track width direction of the projection step portion at the air bearing surface;

wherein the first, second, third and fourth width are widths in the track width direction; and

wherein a distance from the air bearing surface to the second depth position is shorter than a distance from the air bearing surface to the first depth position.

39. (previously presented) A thin film head according to claim 38, wherein the another portion of the projection step portion is formed at both sides of a track center line of the projection step portion.

40. (previously presented) A thin film head according to claim 38, wherein the width of the projection step portion in the track width direction at the air bearing surface is substantially equal to a width in the track width direction of the upper magnetic pole at the air bearing surface.

41. (previously presented) A thin film head according to claim 38, wherein a distance from a track center line of the projection step portion to an edge of the another portion in track width direction at the second depth position from the air bearing surface is greater than a distance from a track center line of the upper magnetic pole to an edge of the upper magnetic pole in the track width direction at the second depth position from the air bearing surface.

Claim 42 (canceled)

43. (previously presented) A thin film head according to claim 38, wherein the another portion of the projection step portion has rectangular contours.

44. (currently amended) A thin film head having a reading part and a recording part comprising:

an upper magnetic pole having a first width at the air bearing surface and a second width which is larger than the first width at from a first depth position from the air bearing surface;

a lower magnetic pole having a lower magnetic main layer, a lower magnetic pole front end portion on the lower magnetic main layer, and a projection step portion on ~~on~~ above the lower magnetic pole front end portion; and

a non-magnetic insulating layer on the lower magnetic main layer, which is formed at an opposite side to the air bearing surface;

wherein the projection step portion includes one portion which faces the upper magnetic pole, and another portion which is formed from a second depth position to

a third depth position from the air bearing surface and having a part which does not face the upper magnetic pole; and

wherein a distance from the air bearing surface to the second depth position is shorter than a distance from the air bearing surface to the first depth position; and

wherein widths of the upper magnetic pole in the track width direction are equal from the air bearing surface to the ~~second~~ first depth position.

45. (previously presented) A thin film head according to claim 44, wherein the projection step portion is formed at both sides of a track center line of the projection step portion.

46. (previously presented) A thin film head according to claim 44, wherein the width of the projection step portion in the track width direction at an air bearing surface is substantially equal to a width in the track width direction of the upper magnetic pole at the air bearing surface.

47. (previously presented) A thin film head according to claim 44, wherein a distance from a track center line of the projection step portion to an edge of the another portion in track width direction at the second depth position from the air bearing surface is greater than a distance from a track center line of the upper magnetic pole to an edge of the upper magnetic pole in the track width direction at the second depth position from the air bearing surface.

Claim 48 (canceled)

49. (previously presented) A thin film head according to claim 44, wherein the another portion of the projection step portion has rectangular contours.

50. (currently amended) A thin film head having a reading part and a recording part comprising:

an upper magnetic pole having a first width at an air bearing surface and a second width which is larger than the first width at a first depth position from the air bearing surface;

a lower magnetic pole having a lower magnetic main layer, ~~a lower magnetic pole front end portion on the lower magnetic main layer,~~ and a projection step portion ~~on above~~ the lower magnetic pole ~~front end portion~~ main layer; and,

a non-magnetic insulating layer on the lower magnetic main layer, which is formed at an opposite side of the air bearing surface; and

a gap layer disposed between the upper magnetic pole and the projection step portion;

an upper magnetic pole top layer recessed from the air bearing surface;

a first coil formed between the upper magnetic pole top layer and the lower magnetic main layer;

a first insulating layer formed on the gap layer and sharing an edge with the upper magnetic pole top layer;

wherein ~~a~~ the projection step portion includes one portion which faces the upper magnetic pole, and another portion formed ~~at from~~ at a second depth position ~~to a third depth position~~ from the air bearing surface and which extends to a third depth position from the air bearing surface, the another portion having a part which does not face the upper magnetic pole,

wherein the upper magnetic pole has a third width at a fourth depth position which is defined by a closest edge from the air bearing surface of the first insulating layer;

wherein a distance between the fourth depth position and the air bearing surface is longer than a distance between the third depth position and the air bearing surface;

wherein a fourth width at the second depth position of the projection step portion is larger than a width in a track direction of the projection step portion at the air bearing surface;

wherein the first, second, third and fourth widths are widths in the track width direction ~~the another portion having a width which is wider than a width of the one portion of the projection step portion at the air bearing surface; and~~

wherein a distance from the air bearing surface to the second depth position of the another portion is shorter than a distance from the air bearing surface to the first depth position.

51. (previously presented) A thin film head according to claim 50, wherein the projection step portion is formed at both sides of a track center line of the projection step portion.

52. (previously presented) A thin film head according to claim 50, wherein the width of the projection step portion in the track width direction at an air bearing surface is substantially equal to a width in the track width direction of the upper magnetic pole at the air bearing surface.

53. (previously presented) A thin film head according to claim 50, wherein a distance from a track center line of the projection step portion to an edge of the another portion in track width direction at the second depth position from the air bearing surface is greater than a distance from a track center line of the upper magnetic pole to an edge of the upper magnetic pole in the track width direction at the second depth position from the air bearing surface.

Claim 54 (canceled)

55. (previously presented) A thin film head according to claim 50, wherein the another portion of the projection step portion has rectangular contours.

56. (new) The thin film head according to claim 38, wherein a front portion of the upper magnetic pole top layer is formed on the upper magnetic pole and the second insulating layer, and wherein the third width is larger than the width.

57. (new) The thin film head according to claim 56, further comprising a second coil covered by the second insulating layer.

58. (new) The thin film head according to claim 50, further comprising:

a second coil; and

a second insulating layer covering the second coil;

wherein the first insulating layer covers the first coil;

wherein the first insulating layer is provided between the non-magnetic insulating layer and the second insulating layer;

wherein the third width is larger than the second width; and

wherein the second insulating layer is provided between the upper magnetic pole top layer and the first insulating layer.